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EXAMINER

KENNEDY, ADRIAN L

ART UNIT

PAPER NUMBER

2129

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/709,970	<b>Applicant(s)</b> MISHRA, AMULYA	
	<b>Examiner</b> ADRIAN L. KENNEDY	<b>Art Unit</b> 2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Examiner's Detailed Office Action***

1. This Office Action is responsive to **Amendment After Non Final**, filed **December 25, 2007**.
2. **Claims 1-17 and 20** will be examined.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 8, 9, 13, 14, 17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guiver et al. (USPN 5,809,490, referred to as Guiver).

Regarding claims 1, 8, 13, and 17:

Guiver teaches,

receiving a first data set (Guiver: Column(C) 4, Lines(L) 43-44) characterizing the behavior of a first system (Guiver: C 3, L 41-46), said first data set containing a first plurality of data elements (Guiver: C 3, L 47-50);  
modeling said first system based on said first data set using said neural network, wherein a first set of weights are generated by said modeling said first system (Guiver: C 7, L 6-11; Examiner's Note(EN): The examiner takes the position that the generation of weights

as taught in applicant's claimed invention would have been obvious to one of ordinary skill in the art, in light of the creation of a weight vector and the adjusting of weight factors taught in the invention of Guiver), wherein said first set of weights corresponds to the set of final weights associated with said plurality of neurons modeling said first system (Guiver: EN: The examiner takes the position that the applicant's teaching of using final weights as the first set of weights would have been obvious in light of Guiver teaching the use of the weight of his winning neuron from the previous iteration as the value used to set surrounding neurons in a succeeding iterations in Column 7, Lines 35-39);

receiving a second data set characterizing the behavior of a second system sought to be modeled by said neural network, said second data set containing a second plurality of data elements (Guiver: C 5, L 23-29; EN: The examiner takes the position that the "second data", and that the "second system" reads on the data input into the neural network and the system to be modeled after the initial training of the neural network using the training set (i.e. first data) and the training system (i.e. first system).);

determining whether said first plurality of data elements follow a similar pattern as said second plurality of data elements (Guiver: C 9, L 64-66; EN: The examiner takes the position that determining of the distance between the output data and the input data is the method Guiver uses to determine whether first and second data elements follow the same pattern); and

modeling said second system based on said second data set using said neural network to generate a second set of weights as the set of final weights for said system (Guiver: C 7,

L 35-39; C 7: 46-47; EN: The examiner has found that the applicant's claimed "[generation] of a second set of weights as the set of final weights for said second system" reads on the weights adjusted by the Kohonen SOM when using the clusterizer after training the SOM, where the adjusted weights act as "final weights" when mapping input data to output data, as taught by Guiver.), wherein said first set of weights are used as initial weights for said plurality of neurons while modeling said second system if said first plurality of data elements follow a similar pattern as said second plurality of data elements (Guiver: C 9, L 64-66; *"the Kohonen neuron with the smallest distance adjusts its weight to be closer to the values of the input data. The neighbors of the winning neuron also adjust their weights to be closer to the same input data vector"*), wherein said second system is another separate from said first system and wherein said first data set is separate from said second data set (Guiver: C 5, L 23-29; EN: The examiner takes the position that the "second data", and that the "second system" reads on the data input into the neural network and the system to be modeled after the initial training of the neural network using the training set (i.e. first data) and the training system (i.e. first system). Furthermore, it would have been obvious to one of ordinary skill in the art at the time of invention that the training set and training model are "separate" from the non-training set and non-training model.).

Regarding claims 2, 9, and 14:

Guiver teaches,

Art Unit: 2129

(Previously Presented): The method further comprising storing said first set of weights in a non-volatile storage (Guiver: C 4, L 17-20; EN: The examiner takes the position that the applicant's specific recitation of storing weights in said non-volatile storage would have been obvious in light of Guiver teaching the use non-volatile storage and it being obvious to one of ordinary skill in the art that weights must be stored.).

Regarding claims 21:

Guiver teaches,

(Previously Presented): The method wherein said pre-specified condition is obtained when said plurality of neurons with associated set of final weights causes said neural network to provide output values within a desired error level (EN: The examiner takes that the applicant's claimed "obtaining" of a specified condition upon producing outputs within a desired error level would have been obvious to one skilled in the art in light of Guiver teaching the use of a neural network in Column 2, Lines 26-27, the developing of outputs that minimize the error in Column 2, Lines 30-39, the use of output neurons in Column 7, Lines 27-28, and the use of neuron as weights in Column 7, Lines 35-39.).

### ***Response to Arguments***

Applicant's arguments filed on December 25, 2007 have been fully considered but are found to be non-persuasive. The unpersuasive arguments made by the Applicant are stated below:

In reference to Applicant's argument:

Art Unit: 2129

For example, the present invention models two separate systems, with corresponding separate data sets (characterizing the respective systems).

Examiner's response:

The examiner has considered the applicant's argument and has found that the applicant's claimed modelling of "two separate systems" is not a limitation which is supported by the disclosed invention.

In reference to Applicant's argument:

It is unclear as to which specific phases of operation of Guiver are being equated to the claimed modelling of the first system and the second system. The Examiner is respectfully requested to provide further detail so that Applicant's can appropriately respond to the rejection.

Examiner's response:

The examiner has considered the applicant's argument and asserts that the previously presented Examiner's Note was based on the recitation of Column 5, Lines 23-29, where Guiver teaches the receiving of new data (i.e. second data) representing a non-training system (i.e. second system) which is used to model said a system after the initial training of the model with a first set of training data (i.e. first data) representing a first training system (i.e. first system).

In reference to Applicant's argument:

The above noted two areas cannot be equated to the claimed modeling of the first and second systems since the operation corresponding to (B) **does not generate** any claimed second set of weights.

Examiner's response:

The examiner has considered the applicant's argument and has respectfully found that the

Art Unit: 2129

applicant has misinterpreted the invention of Guiver. The examiner agrees with the applicant's dividing of the invention of Guiver into two areas (i.e. A and B), however the examiner has found that the claimed "[generation] of a second set of weights as the set of final weights for said second system" reads on the broadly argued "use of the constructed model" (as stated by the applicant). This position is based on the applicant's claimed "[generation] of a second set of weights as the set of final weights for said second system" reading on the weights generated by the Kohonen SOM when using the clusterizer after training the SOM, where the adjusted weights act as "final weights" when mapping input data to output data, as taught by Guiver (Guiver: C 7, L 35-39; C 7: 46-47).

In reference to Applicant's argument:

In this scenario, there are no two different data sets, contrary to the express recitation in claim 1.

Examiner's response:

The examiner has considered the applicant's argument and has found that the applicant has misinterpreted the invention of Guiver. The examiner agrees that there is a training phase (i.e. A1) and a model building phase (i.e. A2). However, the applicant has not acknowledged the existence of the training data set which is used to train the SOM and the working data set which is used to actually build a model. This distinction is clear in Guiver teaching the use of the training data set to train the SOM and the use of a smaller data set (i.e. working data set) to actually model the data (Guiver: C 2, L 45-50).

In reference to Applicant's argument:



Art Unit: 2129

Claim 1 is allowable over Guiver for the addition reason in reciting that, "... determining whether said first plurality of data elements follow a similar pattern as said second plurality of data elements; ..."

Examiner's response:

The examiner has considered the applicant's argument and has found that in not further defining the applicant's claimed "determining [of] whether said first plurality of data elements follow a similar pattern as said second plurality of data elements" is inherent in Guiver teaching that the development of a set of data that is formatted to better represent the input data. Further, it would have been obvious to one of ordinary skill in the art at the time of invention that in formatting a set of data (i.e. working data) to represent a first set of data (i.e. training data), that the two data sets would follow a "similar pattern".

In reference to Applicant's argument:

Thus the Kohonen neuron relied upon by the Examiner, is used in training phase.

Examiner's response:

The examiner has considered the applicant's argument and has found that Guiver explicitly teaches that his Kohonen is used both after and during training (Guiver: C 7, L 46-47).

In reference to Applicant's argument:

There is no comparison step there between data elements of different sets (used for modeling respective systems, as claimed)!

Examiner's response:

The examiner has considered the applicant's argument and has found that the argued

Art Unit: 2129

"comparison step [...] between data elements of different sets" is not a claimed limitation and is not recited in Claim 1.

Examiner's Opinion:

The examiner has considered the applicant's arguments in light of the claimed invention. Furthermore, the examiner respectfully reminds the applicant that **“during examination, the claims must be interpreted as broadly as their terms reasonably allow”**. (MPEP 2111.01 [R-5] I)

It is the goal of the Examiner to move the applicant's claimed invention towards allowability. However, as presently claimed, the applicant's claimed invention is substantially broad and is broad enough to read on the prior art of record. Specifically, the term "separate" in Claims 1, 8, 13, and 17 is capable of being interpreted several ways.

The examiner understands that the disclosed invention is driven to “separate” systems. However, “separate” systems can be broadly interpreted as merely a single system before training and after training. Furthermore, in having thoroughly read the disclosed invention it is clear that what the applicant intends for “separate” to convey is that "there exists another system, which has already been modeled...and a data set characterizing the another system" (Applicant's Disclosure: ¶0012), however this is not a claimed limitation and cannot be relied upon when determining patentability. Additionally, the examiner

has found that the teachings of Paragraph 0015 make it clear that the sets of weights are based on pre-modeled data, which is not a claimed distinction.

Finally, should the applicant choose to amend, the Examiner respectfully suggests that the applicant consider the teachings of Paragraphs 0012 and 0015, further distinguishing the claimed systems from a model during and after training, further distinguishing the claimed weights from weights used during and after training, the subject matter of Claim 3 or 10, the subject matter of Claim 4 or 11, and/or language along the lines of "wherein the generated second set of weights are used to reduce the number of computations required to model the system(s)" (to better clarify the practical application).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claims 1, 2, 8, 9, 13, 14, 17, and 21 are rejected.

***Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adrian L. Kennedy whose telephone number is (571) 270-1505. The examiner can normally be reached on Mon -Fri 8:30am-5pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on (571) 272-3080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ALK

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